

APOLLO

Membranes and membrane transport

SL

Biology

First assessment 2025

10 questions | mark schemes

Mark-scheme answers

Biology SL | Paper 1A | May 2025 TZ1 | Q9 | 1 marks

9. A

Biology SL | Paper 1A | May 2025 TZ2 | Q9 | 1 marks

9. A

Biology SL | Paper 1A | May 2025 TZ3 | Q10 | 1 marks

10. A

2.	a		into the cell/cytoplasm / in / inwards;		1
2.	b	i	a. with aquaporin mRNA more water enters cells / has a larger relative volume / grow more / become bigger / water enters faster / more osmosis occurs OR with aquaporin mRNA, volume (continually) increases but the control does not / remains stable / reaches equilibrium; b. with aquaporin mRNA, egg cells burst but not with control;	<i>Accept vice versa. a. Must use a comparative word such as larger, faster, more, bigger but do not accept numbers only.</i>	2
2.	b	ii	a. aquaporins increases permeability of plasma/cell membranes to water OR (aquaporins) allows faster/easier movement/diffusion of water molecules OR (aquaporins) increase rate of osmosis / facilitated diffusion; b. water moves from hypotonic solution outside cell into (egg) cells due to differences in solute concentration OR allow water to move down or along a concentration gradient;	<i>a. Answer should be qualified e.g. a reference to 'faster/more/increase/facilitate needed.</i>	2
2.	c		eggs will be of different initial volumes/sizes/shape;	<i>OWTTE Answers should include both the idea of different and initial/starting/beginning volume. Ignore fair test or fair comparison.</i>	1
2.	d		the investigation is reliable as it was repeated 10 times / there were multiple trials/readings OR the investigation is not reliable as there were not enough trials / 10 trials may not be enough OR reliability cannot be assessed as no error bars / standard deviation;		1

Question	Answers	Notes	Total
----------	---------	-------	-------

4.	a	hydrolysis/catabolic reaction;		1
4.	b	a. branching of capillaries gives a large total surface area for exchange OR capillaries are numerous so every cell is close enough to allow rapid exchange of material/monosaccharides OR capillaries beds are dense increasing surface area for exchange; b. thin/one cell thick <u>walls</u> facilitate diffusion/exchange of materials/monosaccharides; c. fenestrations/larger openings/pores between capillary cells (for more rapid movement) for exchange of material/monosaccharides;		2 max
4.	c	a. movement of material/fructose from an area of high concentration to low/with the concentration gradient; b. does not require (ATP) energy/is passive; c. requires channel/integral proteins; d. channel proteins make membrane selectively permeable;	<i>c. Do not accepts carrier protein, pumps or any protein that requires ATP to function</i>	2 max

Question	Answers	Notes	Total
----------	---------	-------	-------

Mark-scheme answers

Biology SL | Paper 1A | Nov 2025 TZ1 | Q3 | 1 marks

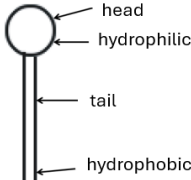
3. C

Biology SL | Paper 1A | Nov 2025 TZ1 | Q9 | 1 marks

9. B

Biology SL | Paper 1A | Nov 2025 TZ3 | Q2 | 1 marks

2. A

3.	a	proteins/glycoproteins/glycolipids are found throughout the phospholipids;	OWTTE <i>It must be clear that the molecules are embedded/ included in the layer. Names of molecules alone are not enough for the mark.</i>	1
3.	b	a. full structure of the phospholipid labelled i.e. head/phosphate AND tail/fatty acid/lipid AND the drawing must have two fatty acids; b. head labelled as hydrophilic/mixes with water AND at least one of the two tails labelled as hydrophobic/doesn't mix with water;	Example:  Accept labels from marking points a. and b. on the diagram. If a plasma membrane with the correct phospholipid structure labelled correctly is acceptable.	2

– 11 –

8825 – 6024M

Question			Answers	Notes	Total
3.	c		a. diffusion will occur if (oxygen) concentrations inside and outside the cell are different / there is a concentration gradient; b. increased concentration of oxygen outside of cell will increase rate of uptake/net movement into the cell / the higher the concentration gradient the faster the rate of uptake; c. no more net movement when oxygen concentrations are equal inside and outside the cell OR eventually a plateau in concentration will occur/concentrations reach an equilibrium;	<i>b. accept converse.</i> <i>b. refers to rate of diffusion, and not to direction of movement</i>	3

– 12 –

8825 – 6024M

Question	Answers	Notes	Total
----------	---------	-------	-------

Mark-scheme answers

Biology SL | Paper 1A | Specimen 2025 | Q12 | 1 marks

12. C